

## UL TEST REPORT AND PROCEDURE

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| <b>Standard:</b>                   | UL 62368-1, 2nd Ed, 2014-12-01 (Audio/video, information and communication technology equipment Part 1: Safety requirements)<br>CAN/CSA C22.2 No. 62368-1-14, 2nd Ed, Issued: 2014-12-01 (Audio/video, information and communication technology equipment Part 1: Safety requirements) |
| <b>Certification Type:</b>         | Component Recognition  |
| <b>CCN:</b>                        | QQJQ2, QQJQ8 (Power Supplies for Use in Audio/Video, Information and Communication Technology Equipment)   |
| <b>Complementary CCN:</b>          | N/A  |
| <b>Product:</b>                    | DIN-rail mounted 3-phase SMPS  |
| <b>Model:</b>                      | DRB480-xx-3-zz (where xx can be 24, 48 or 72 indicating output voltage and where zz can be any character or symbol for marketing purposes only with no effect on safety or blank)  |
| <b>Rating:</b>                     | Input (all models): 3 x 400 - 500Vac, 50-60 Hz, 3 x 1.2 A  |
| <b>Applicant Name and Address:</b> | NEXTYS SA<br>VIA LUSERTE SUD 6<br>6572 QUARTINO SWITZERLAND  |

This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of UL LLC ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

The applicant is authorized to reproduce the referenced Test Report provided it is reproduced in its entirety.

UL authorizes the applicant to reproduce the latest pages of the referenced Test Report consisting of the first page of the Specific Technical Criteria through to the end of the Conditions of Acceptability.

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Prepared By: Oreste Buzzetti / Project Handler      Reviewed By: Isaia Bonavoglia / Reviewer

### Supporting Documentation

The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:

A. Authorization - The Authorization page may include additional Factory Identification Code markings.

B. Generic Inspection Instructions -

- i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report.
- ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.
- iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

### Product Description

Product under evaluation is a series of DIN-rail mounted 3-phase SMPS

### Model Differences

All models differ for output power and voltage. Transformers are different for each family.

Nomenclature:

xx = output voltage in volts (24 or 48 or 72)

### Test Item Particulars

|  |                            |
|--|----------------------------|
| Classification of use by   | Instructed person          |
| Supply Connection  | AC Mains                   |
| Supply % Tolerance   | Other<br>+ 10 % / - 12.5 % |
| Supply Connection – Type   | permanent connection       |
| Considered current rating of protective device as part of building or equipment installation | 20 A;<br>building;         |
| Equipment mobility   | for building-in            |
| Over voltage category (OVC)  | OVC II                     |
| Class of equipment   | Class I                    |
| Access location  | restricted access area     |
| Pollution degree (PD)  | PD 2                       |
| Manufacturer's specified maximum operating ambient (°C)                                      | 55 (70°C with derating)    |
| IP protection class  | IPX0                       |
| Power Systems  | TN<br>TT                   |
| Altitude during operation (m)  | 303000 m                   |
| Altitude of test laboratory (m)  | 2000 m or less             |
| Mass of equipment (kg)   | 0.5                        |

### Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (T<sub>ma</sub>) permitted by the manufacturer's specification of : 55°C (70°C with derating)
- The product is intended for use on the following power systems : TT, TN
- Considered current rating of protective device as part of the building installation (A) : 20
- Mains supply tolerance (%) or absolute mains supply values : +10%/ -12.5%
- The equipment disconnect device is considered to be : To be provided in final installation
- The following were investigated as part of the protective earthing/bonding : Printed wiring board trace (refer to Enclosure - Schematics + PWB for layouts)
- The following are available from the Applicant upon request : Installation (Safety) Instructions / Manual
- The following scope limitations apply to this test report and additional evaluation and/or tests may be required when submitting this CB Report to a National Certification Body (NCB) to obtain a national mark:
  - No EMC tests nor evaluation to EMC Directive 2004/108/EC and 2014/30/EU
  - No evaluation to RoHS Directives 2002/95/EC, 2011/65/EU and (EU) 2016/585
  - No evaluation to Council Recommendation 1999/519/EC nor 2006/25/EC
  - Only English version of markings and instructions provided and reviewed
- Products supplied with tri-phase voltage of 400-500 V between phases and 230-290 V between each phase and earth.

### Engineering Conditions of Acceptability

For use only in or with complete equipment where the acceptability of the combination is determined by UL LLC. When installed in an end-product, consideration must be given to the following:

- The following product-line tests are conducted for this product : Electric Strength, Earthing Continuity
- The end-product Electric Strength Test is to be based upon a maximum working voltage of : Primary-Secondary: 203 V<sub>rms</sub>/656 V<sub>pk</sub> (Model DRB480-24), Primary-Secondary: 232 V<sub>rms</sub>/456 V<sub>pk</sub> (Model DRB480-48), Primary-Secondary: 256 V<sub>rms</sub>/480 V<sub>pk</sub> (Model DRB480-72)
- The following output circuits are at ES1 energy levels : All outputs of 24 and 48 V models
- The following output circuits are at ES2 energy levels : Output of 72 V model
- The following output circuits are at PS3 energy levels : All outputs of all models
- The maximum investigated branch circuit rating is : 20 A
- The investigated Pollution Degree is : 2
- Proper bonding to the end-product main protective earthing termination is : Required
- An investigation of the protective bonding terminals has : been conducted
- The following end-product enclosures are required : Electrical, Fire, Mechanical
- The following magnetic devices (e.g. transformers or inductor) are provided with an OBJY2 insulation system with the indicated rating greater than Class A (105°C) : Transformers on Mainboard of all models (TR1) are Class B (130°C), Transformers on AUX board of all models (TR1) are Class F (155°C)
- The equipment is suitable for direct connection to : 3-Phase AC mains supply
- The power supply was evaluated to be used at altitudes up to : "3,000 m"
- Safeguards against capacitor discharge after disconnection of a connector shall be checked in final installation.


### Additional Information

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### Additional Standards

The product fulfills the requirements of: EN 62368-1:2014 + A11:2017

### Markings and Instructions

| Clause Title   | Marking or Instruction Details  |
|--|---|
| Equipment identification marking – Manufacturer identification         | Listee's or Recognized companys name, Trade Name, Trademark or File Number  |
| Equipment identification marking – model identification                | Model Number  |
| Equipment rating marking – ratings                                     | "Input Ratings (voltage, frequency/dc, current/power)", "Output Ratings (voltage, frequency/dc, current/power)"   |
| Class I equipment -Terminal for main protective earthing               | Provided adjacent to the main protective earthing terminal<br><br>(IEC 60417-5019)                   |
| Restricted Access Area   | "Equipment is intended for installation in Restricted Access Area" (Instruction)/"Les matériels sont destinés à être installés dans des EMPLACEMENTS À ACCÈS RESTREINT" (Instruction) |
| Disconnect device - Permanently connected equipment                    | Statement indicating that an appropriate disconnect device shall be incorporated in the building installation wiring. (Instruction)   |
| F.3.2.1 Equipment identification marking – Manufacturer identification | Listee's (TDK-Lambda) or Recognized companys name, Trade Name, Trademark or File Number   |
| <b>Special Instructions to UL Representative</b><br>N/A                |   |

| <b>BD1.0</b> | <b>TABLE: Production-Line Testing Requirements</b>   |                 |                     |            |           |              |
|--------------|--|-----------------|---------------------|------------|-----------|--------------|
| <b>BD1.1</b> | <b>Electric Strength Test Special Constructions – Refer to Generic Inspection Instructions, Part AC for further information.</b>   |                 |                     |            |           |              |
| Model        | Component  | Removable parts | Test probe location | Test V rms | Test V dc | Test Time, s |
| DRB480-24    | Input connector  | -               | Output connector    | -          | 5000      | 1            |
| DRB480-48    | Input connector  | -               | Output connector    | -          | 5000      | 1            |
| DRB480-72    | Input connector  | -               | Output connector    | -          | 5000      | 1            |
| <b>BD1.2</b> | <b>Earthing Continuity Test Exemptions – This test is not required for the following models:</b>   |                 |                     |            |           |              |
|              | -  |                 |                     |            |           |              |
| <b>BD1.3</b> | <b>Electric Strength Test Exemptions – This test is not required for the following models:</b>   |                 |                     |            |           |              |
|              | -  |                 |                     |            |           |              |
| <b>BD1.4</b> | <b>Electric Strength Test Component Exemptions – The following solid-state components may be disconnected from the remainder of the circuitry during the performance of this test.</b> |                 |                     |            |           |              |
|              | -  |                 |                     |            |           |              |

| <b>BE1.0</b> | <b>Sample and Test Specifics for Follow-Up Tests at UL</b> |          |      |            |                |
|--------------|--|----------|------|------------|----------------|
| Model        | Component  | Material | Test | Sample (s) | Test Specifics |
| -            | -  | -        | -    | -          | -              |